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DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

Y1. NATIONAL PARK

FILE COPY

FILE No. 143

MONTHLY REPORT

FOR

MARCH, 1924.

MARCH, 1924

April 2, 1924.

Dear Sir:

The following is my report on conditions in Yellowstone National Park and on the operation of the park for the month of March, 1924:

I. GENERAL CONDITIONS

The month of March has been generally mild with only moderate winds. Snowfall has been moderate except for the closing week of the month during which time snow depths have been materially increased at all points. Skiing throughout the park is exceedingly difficult on account of snow conditions. The mail stage to Cooke City has maintained its weekly schedules throughout the month but there has been no other travel on this road. The Transportation Company has done a limited amount of sleighing between Mammoth and Canyon but the road is now closed to all traffic. Recent efforts to travel by sleigh between Canyon and Norris have failed. A driver and team left Canyon on Saturday morning, the 29th, and he returned to Canyon with the horses but without the sleigh at six o'clock on Sunday evening, the 30th, after having reached a point about 4 miles east of Canyon Junction. Similar efforts to travel by sleigh between Mammoth and Tower Falls were extremely slow and irksome. It required ten hours of continuous effort to reach Tower Falls with an empty sleigh (distance 18 miles) on Saturday, the 29th. The highway between Gardiner and Mammoth has remained open throughout the month and travel between these points has not been retarded. All other park roads, except as above noted, are closed to traffic. The road conditions as above noted have been occasioned by the weather conditions of the past week.

Weather

The following records are quoted from the report for March of the Observer in charge of the local United States Weather Bureau at Mammoth Hot Springs, Park Headquarters:

The month was colder than normal and characterized by generally unsettled weather with light snowfall occurring almost daily, accompanied by northerly winds. The wind movement was unusually light for March.

Temperature: Monthly mean, 22.1° , is 4.4° below normal. The first week was moderately warm for the season, but temperatures consistently below normal prevailed thereafter. No unusual extremes occurred, the highest being 43° on the 6th, and the lowest -2° on the 18th.

Precipitation: Total, 1.21 inches, is 0.97 inch below normal, all of which occurred as snowfall.

Snowfall: Total 13.9 inches; normal 17.0 inches. Snow, mostly light, occurred on 26 days of the month. The greatest fall for any one storm was 3.8 inches on the 29-30th. The depth on the ground increased from 6.7 inches on the 1st to 12.6 inches on the 31st. The 20-year average depth of snow on the ground at the end of March is 5.8 inches.

Wind: Average hourly velocity 7.4 miles; normal 8.8. The maximum velocity, 29 miles from the northwest on the 14th, is with one exception, the lowest of record for March. The prevailing direction was from the northwest, which is unusual, and caused the month to be somewhat disagreeable, despite the fact that the velocity was generally light.

Sunshine: Percentage of possible 57; normal 57.

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Snow Depths: Rangers on stations report the following snow depths at the close of the month. Snow depths of March 31, 1923, are also given for purposes of comparison:

<u>Station</u>	<u>1923</u> <u>Inches</u>	<u>1924</u> <u>Inches</u>
Lake	34	40
Snake River	50	52
Sylvan Pass	29	38
Riverside	26	38
Gallatin	31	35
Tower Falls	12	30
Slough Creek-Lower Ranch	18	30
Slough Creek-Upper Ranch	--	42
Buffalo Ranch	10	34

Snow Depths (Continued):

<u>Station</u>	<u>1923 Inches</u>	<u>1924 Inches</u>
Canyon	37	45
Bechler River	72	9-
Soda Butte Station	--	48
Hellroaring	--	14
Mammoth	--	12.6
Upper Basin	--	24
Sportsmans Lake	--	55
Norris	--	24
Thumb	--	40

The Union Pacific snowplow arrived at West Yellowstone on the 11th, and a weekly schedule has since been maintained.

Travel

A copy of the Chief Ranger's travel report for the month of March is hereto attached, and needless to say this travel has been limited to persons traveling from Gardiner to Mammoth.

II. PERSONNEL.

On March 1 there were 69 employees on the payrolls, and on March 31 there were 68. The following list shows the number of appointees of various classes serving during the month, with a general statement of the kind of work in which they were engaged:

<u>No.</u>	<u>Class</u>	<u>Kind of Work Performed</u>
1	Superintendent	General administration and supervision of all activities in the park.
1	Asst. Superintendent	Administration, purchasing, disbursing.
2	Asst. Engineers	1 in charge of engineering work; 1 assisting.
5	Clerks	1 Financial Clerk; 1 Cost Accounting Clerk; 1 Personnel and File Clerk; 1 Clerk on orders, proposals and vouchers, also handling time and payroll work; 1 stenographer-typist on stenographic work for Superintendent.

3	Electricians	Operated power plant regular shift, including Sundays, read meters, did necessary line work.
3	Foremen	1 in charge of headquarters corral and freighting work about headquarters; one on road work; one repairing small tools in blacksmith shop.
1	Telegrapher	Sent and received all Government Western Union messages, operated one shift on telephone switchboard.
2	Telephone Switchboard Operators	One operated telephone switchboard daily shift, including Sunday; one W.A.B. operator (no service during March).
1	Master Mechanic	In charge of shops and of repair to heavy road machinery.
2	Blacksmiths	General blacksmith work, including shoeing of horses in shop, overhauling and repairing tools and equipment.
1	Machinist	Repairing equipment.
1	Master Painter	General shop work, including painting equipment and buildings.
1	Master Plumber	In charge of general plumbing and water and sewer systems.
1	Auto Mechanic	On duty in power plant.
1	Carpenter	Repairing buildings at headquarters.
5	Laborers	Teaming, freighting, assisting mechanics and miscellaneous work at headquarters.
1	Steward and Master of Transportation	In charge of all transportation and of storehouses.
1	Chief Buffalo Keeper	In charge of tame buffalo herd.
2	Asst. Buffalo Keepers	One in charge of hay ranch operations at Slough Creek (returned to duty on March 6 from L.W.O.P.); one assisting.
1	Buffalo Herder	Assisting Buffalo Keeper

1	Park Naturalist	Scientific research work and developing museum.
1	Chief Park Ranger	In charge of ranger force.
1	First Asst. Chief Park Ranger	In charge of Northern District.
1	Asst. Chief Park Ranger	On duty at Lake District.
20	Park Rangers (14 WAB)	Patrolling, protection of game, miscellaneous duties.
7	Temporary Park Rangers	Patrolling, miscellaneous duties.

Leaves of Absence

Lee Cottrell, Park Ranger, March 1-16, 13 days.
 Charles A. Brant, Field Steward & Metr. Transp., March 1, 1 day.
 George Winn, Park Ranger, March 1-17, 14 days.
 Arthur W. Burney, Asst. Engineer, March 1, 1 day.
 Wendell S. Keate, Park Ranger, March 1-22, 19 days.
 William Wiggins, Master Plumber, March 31, 1 day.
 Ray Hill, Laborer, March 3-11 (noon), 7-1/2 days.
 John A. Wells, Park Ranger, March 3-18, 14 days.
 Nathan E. Sandel, Teleg. Oper., March 8, 1 day.
 William I. Davis, Asst. Engineer, March 10-15, 6 days.
 Anna E. Madsen, Clerk, March 4 (noon), 1/2 day.
 Andrew R. Edwin, Clerk, March 1 (noon), 1/2 day.
 James McBride, Park Ranger, March 3-5, 3 days.
 Lucy Bilkert, Clerk, March 4 (noon), 1/2 day.
 Burton C. Lecombe, Ch. Buffalo Keeper, March 3-7, 5 days.
 Arthur W. Burney, Asst. Engineer, March 10-13, 3 days.
 Harry McFarland, Foreman, March 19-21, 3 days.
 Anna E. Madsen, Clerk, March 8, 13-15, 4 days.
 Peter E. Bilkert, Clerk, March 4-8, 5 days.
 Joseph O. Rhode, Park Ranger, March 1-8, 7 days.
 Joseph Joffe, Clerk, March 21-31, 9 days.
 Lucy Bilkert, Clerk, March 17 (noon), 1/2 day.
 Charles D. Dale, Electrician, March 27-29, 3 days.
 R. R. Robinson, Machinist, March, 24-28, 5 days.
 Earl Bowman, Park Ranger, March 15-31, 14 days.
 Carl N. Dunrud, Park Ranger, March 15-17, 2 days.
 Thad C. Pound, Park Ranger, March 29-31, 2 days.
 Leroy Hill, Asst. Supt., March 27-29, 3 days.
 W.L. Bicket, Carpenter, March 22-27, 5 days.
 Julius L. Greer, Park Ranger, March 14-15, 2 days.
 Sam T. Woodring, Chief Ranger, March 19-20, 1/2 day 29th, 2-1/2 days.
 William I. Davis, Asst. Engineer, March 29, 1/2 day.
 William Wiggins, Master Plumber, March 4-6, 3 days.

Sick Leave

Anna E. Madsen, Clerk, March 17-19, 3 days.

Leave Without Pay

Julia S. Stockett, Clerk, March 1-31.

Warren Hutchings, Asst. Buffalo Keeper, March 1-5.

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In addition to the regular employees listed above under appointment, the following were employed temporarily by the day:

	<u>March 1</u>	<u>March 31</u>
Laborers	3	31
Appointees	69	68
	<u>72</u>	<u>99</u>

III. WORK COMPLETED.

(c) Miscellaneous Improvement Work:

On March 18 Foreman Deate T. White, with a crew of 30 men and 5 teams commenced work on reconstruction of the East Fork Road. Camp was established on the Elk Fork, and good progress was made on the log crib and the east abutment of the Elk Fork bridge.

IV. WORK IN PROGRESS.

(a) Construction of Physical Improvements

Yellowstone Park Hotel Company:

There has been no new construction work at any of the hotels during the month except at Mammoth. The work at Mammoth Hotel was begun about March 15th when a crew of 35 men were put to work on the new kitchen and the additions to the dining room. All partitions and lathing in the kitchen has been completed and plastering will begin about April 15th. All the old partitions have been removed in connection with the extension work on the dining room and the trestles are all in. This work is now well under way and preliminary work has been done (removal of rock and other obstacles, etc.) in connection with the new barber shop and Marinello Shop.

Yellowstone Park Transportation Company:

A crew of about 50 men have been employed throughout the month and have been engaged in the work of overhauling and repairing cars and trucks. New additions to the bunk house are contemplated for the month of April.

Yellowstone Park Camps Company:

A crew of 32 men have been employed during the month on new additions and improvements at Mammoth Camp. 75 new cabins and one house, 28 x 32, are being erected, and this work is now well under way.

(c) Miscellaneous Improvement Work

The Master Painter worked in the hospital. Put 2nd coat on walls. One more coat is needed on the walls, cleaning to be done and all woodwork is still to be finished. He painted two trucks, papered bedroom at Lindsley's quarters, and painted bathroom and papered ceiling of front room at Burney's quarters.

The Master Mechanic and his assistants worked in the garage overhauling 6 trucks. Two new truck bodies were also built.

The Blacksmith repaired light tools, ten wagons and sixteen slip scrapers; did horseshoeing and made repairs on equipment as needed.

The Carpenter worked in the hospital and in quarters.

The Steward and Master of Transportation worked in the storehouse repairing tools, patching tubes and tires, building shelves, etc.; hauled equipment from Gardiner to storehouse. Hay was also hauled from Gardiner to Mammoth for feeding the elk. Several elk were transported from Mammoth to Gardiner for shipment.

The Master Plumber and his assistants installed a vacuum pump in connection with boilers in the heating plant in the garage. Capacity of pump 12,000 sq. ft. direct radiation; maintained sewer and water systems at Mammoth and commenced overhauling heating and plumbing systems in the new hospital.

The Telephone System and Power Plant were operated in the usual manner. The Power Plant was run constantly with the results shown in comparison for March 1923, as follows:

	1923	1924
Total current generated, in KWH	34,641	44,840
Of this, sold to public utilities		
at 5¢ per KWH	1,311	4,002
Consumed for street lighting	1,281	1,706
Balance, consumed in Government		
buildings, for power and lighting,		
lost on lines in transit	32,049	39,132
Peak load during month in KWH	72	92

Current consumed at the hospital was 5867 KWH.

Sold 1924	4002
Sold 1923	1311
Increase	2691

Generated 1924,	44,840
Generated 1923,	34,641
	9,199

The work during the month of March consisted of the regular maintenance of electric and telephone equipment and installing annunciators in the hospital, which is practically completed.

The Telephone and Switchboard Office was open daily from 7:30 A.M. to 8:45 P.M. The total business handled was as follows:

Switchboard Calls

On Government local lines.....	2319
On Hotel Company lines.....	293
On Long Distance Connections.....	131
Total	2743

Telegrams

Government sent.....	70
Commercial sent.....	36
	<u>106</u>

Government received.....	39
Commercial received.....	31
	<u>70</u>

Office Force

The office force was busy with usual routine work, which includes orders, payment of vouchers, preparation of accounts, reports, general correspondence, etc. 1067 pieces of official mail were received and 693 were sent out during the month.

Considerable work was done by Mrs. Lucy Bilkert, Clerk, in addition to her regular duties, in the preparation and printing of photographs for pasting in scrap books, and making complete files of same. She has now completed 7 albums.

The Personnel and File Clerk has devoted considerable time during the month to transferring old files and rearranging current files, several new steel file cabinets having been received. In accordance with authority in letter of March 3, 1924, from the Department, (authority granted by Congress in H.R. Report No. 226, 68th Congress, 1st Session) a great quantity of old files were destroyed, thereby affording more space for current files.

Ranger Patrols and Activities

Regular patrols have been made from all stations during the month and satisfactory conditions are reported from all points. The mild weather conditions which obtained throughout the major part of the month has made skiing very difficult. Patrols from Sportsman's Lake returning on the 26th report 55 inches of snow at that point. Patrols from Gallatin to Grayling starting on the 28th have not yet reported in. Lake rangers are now on patrol to Thumb and to the Upper Yellowstone. Thorough patrols have been made of the Cold Creek and Miller Creek country during the month. Rangers Finch and Ogston covered this country on their regular patrol during the first week of the month. Assistant Chief Ranger Douglas made a special patrol of this region at about the same time, making his approach via Pelican Creek and returning via the Lamar River. Patrols from Riverside to Upper Basin completed March 15th report an average snow depth of 2 feet on the highway between those points. A patrol recently made from Soda Butte station to Pebble Creek and from thence over the Divide to Slough Creek reports snow depths of from 3 to 4 feet, with numerous moose signs.

Assistant Chief Ranger Douglas is now at Thumb, and is en route to Snake River and Bechler.

First Assistant Chief Ranger Trischman is on a special patrol to Upper Basin, Riverside and Gallatin. He phoned in from the Upper Basin today (31st) and reports 2 feet of snow at Norris, 3 feet in Gibbon Canyon and an average snow depth of 2 feet on the highway from Fountain to Upper Basin. Game signs are scarce in this district at the present time. The only game seen on his trip thus far were 2 elk and 2 moose near the Upper Basin.

Chief Ranger Woodring has been busy throughout the month directing the work of the department. He has made a limited number of individual elk shipments and a limited number have been tagged. Carload shipments have not been practicable by reason of the near approach of the calving season, and the trapping of elk has not been very successful except during the storm conditions of the past week.

All applications for temporary ranger appointments have been carefully examined and recommendations and comments have been prepared and submitted to Mr. Albright together with the files of all applicants who have been considered as suitable for appointment.

VII. POLICIES.

There were no changes in policy during the month.

VIII. COST OF OPERATION.

The cost of operating the park for the month of March, 1924, will be shown in the monthly Cost Accounting Report which will go forward as soon as prepared.

IX. OTHER MATTERS OF INTEREST.

Wild Animals

Game Conditions: Game conditions are somewhat unsettled at the close of the month. The moderate weather conditions of the first 20 days effected a considerable reduction in snow depths which was followed by lower temperatures and storm conditions, producing a crusted condition of the snow and a material increase of snow depths, and has worked a considerable hardship on the game, in that the forage which is becoming increasingly scarce on the lower ranges is difficult to obtain. The increased snow depths on the higher ranges has caused a downward movement of the herds. In the event of further storms and deeper snow it will be necessary to do some elk feeding on the Gardiner flats. A limited amount of elk feeding has been done throughout the month at the lower Slough Creek Ranch, as forage in that district is scarce and some of the animals are getting thin and weak.

Elk: All movements of elk during the first three weeks of the month were to the higher ranges, which was due to the increasing scarcity of forage to the lower ranges, and the mild weather conditions, but the storm conditions of the last ten days have driven them back to the lower levels creating a condition that will necessitate feeding should the storm conditions continue. The condition is most pronounced at Gardiner where approximately 1000 elk were counted between Mammoth and Gardiner. On the 29th Chief Ranger Woodring observed approximately 100 head ranging on the meadows of the Hoppe and Reese Ranches (4 miles below Gardiner) on the late afternoon of the 30th but no damages to haystacks have been thus far reported. Some of the elk are getting thin and weak but the general condition of the herds is satisfactory. The following elk shipments were made during the month:

Mr. Harry J. Fox, Secy. & Treas., Idaho State Elks Association, Pocatello, Idaho, 3 only yearlings - 1 male and 2 females shipped March 11, 1924.

Gen. Harry C. Trexler, Allentown, Pa. 4 only yearlings, females, shipped March 14, 1924.

Gen. Harry C. Trexler, Allentown, Pa. 2 only cows, shipped March 19, 1924.

Mr. M. L. Moore, Commissioner of Sanitation, Parks and Public Property, Toledo, Ohio. 2 only cows, shipped March 19, 1924.

The following losses, winter kills, etc., were reported during the month:

14 only cows. Buffalo kills, Lower Slough Creek Ranch.

5 only cows. Buffalo kills, Buffalo Ranch.

2 only cows, Winter kills, Mammoth.

13 only - 7 cows and 6 calves. Winter kills. Hellroaring.

34 Total losses for the month. The total elk losses for the season as previously reported was 16. Total to date, 50.

Tagging of Elk: You are familiar, no doubt, with the plan of the Bureau of Biological Survey to have elk tagged in different sections of the park to determine extent of drifting by these animals, and in this plan the National Park Service has agreed to cooperate. It was hoped last year by the Biological Survey that the work could be started at that time but instructions came too late, as the elk had already begun to leave the lower altitudes, and as the tagging entailed considerable work and expense in the building of catching pens, chutes, etc., it was thought impracticable to begin the work as late as February, the date that arrangements were completed, therefore it was postponed until this season.

In November, last year, a corral or catching pen, was constructed between Gardiner and Mammoth and pursuant to the plan

above outlined a total of 82 elk were tagged at Mammoth during the month and their numbers were 501 to 550 inclusive and 619 to 650 inclusive.

Antelope: There is nothing new to report regarding the antelope this month. The main body of the herd continues at a point about 2 miles below Gardiner on the Sherman and Stoll Ranches. Their range is patrolled daily and frequent counts are had. The largest count submitted on any one day during the month from points outside the park is 186. Daily patrols from points within the park report a total of 91 as the largest count for any one day during the month. This animal is wintering in good shape and does not appear to have been materially affected by the storm conditions of the past 10 days. The total losses for the season thus far reported is 5.

Deer: Deer have been reported in their usual numbers by rangers on patrol during the month. The largest count had for the period was submitted by Anderson and Ross, giving a count of 94 observed on their patrol from Hellroaring to Crevise. Ranger Brown reports a total of 70 in the neighborhood of Hoppe's Ranch. All reports indicate that they are wintering in good shape. The losses during the month are reported as follows:

	2 only - coyote kills - on Cottonwood.
	2 only - coyote kills - at Crevise Lake
Total	<u>4</u>

The season's losses as indicated by the report of last month was 12, making a total of 16 for the season to date. There is a very noticeable increase of deer in the Mammoth-Gardiner district over the numbers of former seasons.

Mountain Sheep: I have nothing to add to the report of last month on this animal. They are apparently wintering in good shape. No losses have been reported.

Wild Buffalo: Patrols during the month to Pelican, Cold Creek and Miller Creek (the favorite range of the wild buffalo) report as follows: 4 were observed by Assistant Chief Ranger Douglas on Pelican Creek and 7 were seen by Rangers Finch and Ogston on the South Fork of Cache Creek, making a total of 11. Further efforts will be made to obtain a full count on the wild herd this spring.

Tame Buffalo: The herd is in splendid condition. Considerable efforts were required to keep the herd at the feeding grounds during the first half of the month. On the morning of the 12th there was only 44 to be seen. They had moved out in the direction of their summer range; they were returned to the ranch, however, the following day, and apart from a few stray bulls have remained continuously at the feeding grounds to date.

1 cow died during the month - winter kill - and there has been 3 abortions in the herd to date. 160 tons of hay were

fed during the month, and barring unusual weather conditions it will hardly be necessary to do any feeding after April 10th.

Moose: I have no additions to make to the moose count of last month. In fact only a few were seen by rangers on patrol during the month, although signs were observed at their usual haunts.

Small Game: Douglas and Dunrad report a colony of otter at the Thumb. Eight were counted near the Thumb Station at one time. The first appearance of summer birds was reported by Park Naturalist E. J. Sawyer on February 14. Woodchucks were seen on the road near Boiling River on March 10 and gophers have been quite numerous preceding the storm conditions of the past week.

Predatory Animals: Reports from rangers and others authorized to hunt coyotes in the park show the following results for the month of March:

Mammoth	11
Hellroaring.....	6
Tower Falls.....	6
Slough Creek.....	2
Snake River.....	5
Upper Basin.....	1
Gallatin.....	2
Total	<u>33</u>

Comparative figures on coyotes for this and the preceding season to date are as follows:

<u>1924</u>		<u>1923</u>	
October and November.....	53	October and November.....	65
December.....	22	December	45
January.....	64	January.....	42
February.....	37	February.....	24
March.....	33	March.....	31
Total.....	<u>209</u>	Total.....	<u>207</u>

The kills for the Mammoth-Gardiner district total 64.

Methods of hunting coyotes during the coming month will include our best efforts to locate their dens, and we have hopes of destroying several litters during the month. Wolf signs have been very scarce throughout the entire season, and we have no report of any wolf kills in the park. The same is true regarding mountain lions and it is hardly likely that there will be any captures or kills of either wolves or mountain lions this season.

The feeding of horses - 55 in number - was continued at Slough Creek throughout the month, and a limited amount of elk feeding was done. The total amount of hay fed to horses and elk was 50 tons. A total of 160 tons of hay was fed at the Buffalo Ranch, making a grand total for the month of 210 tons.

DEPARTMENT OF THE INTERIOR.

NATIONAL PARK SERVICE—YELLOWSTONE NATIONAL PARK.

CHIEF RANGER'S MONTHLY TRAVEL REPORT, MONTH OF

March, 1924

	NORTH.		WEST.		EAST.		SOUTH.		ALL TRAIL ENTRANCES.		SUMMARY.	
	Cars.	People.	Cars.	People.	Cars.	People.	Cars.	People.	Horses.	People.	Cars.	People.
Automobile permits issued												
Autobile permits issued (complimentary)												
Cars entering second time												
Motor-cycle permits issued												
Total												
Passengers in horse-drawn vehicles												
Passengers on horseback		23										23
Passengers on bicycles												
Passengers on foot												
Total incoming passengers with private transportation		23										23
WITH HIRED TRANSPORTATION.												
Yellowstone Park Transportation Co												
Total incoming passengers with hired transportation												
TOTAL INCOMING PASSENGERS		23										23

Total automobiles in public camping grounds

Total passengers Cooke City stage

SEASON TOTAL END OF LAST MONTH

1005

Total automobile campers in public camping grounds

Total visitors Cave Falls—Bechler River Region

SEASON TOTAL TO DATE

1028

Total campers, all classes

8

1028

Sickness and Medical Attention

Dr. J. M. Wolfe, National Park Service physician, reports ³⁶
resident calls and ⁶² office calls during the month.

School

The school report for the month of March is attached hereto.

Post Office

The question of providing more spacious quarters for a summer postoffice came up during the month, and on March 19 to 21 PostOffice Inspector C. T. Hansen, of Sheridan, Wyo., visited the park and went over the situation carefully. A report of his recommendations was made by wire to Superintendent Albright in Washington, with request that he discuss the matter personally with the proper officials of the postoffice department before he left there with a view to a proper solution of the problem.

Effective March 15th, train service on the Yellowstone Park Branch of the N. P. R. R., Livingston, Mont., to Gardiner, Mont., was curtailed to the extent that trains are run on Sunday, Monday, Wednesday and Friday only. Since this new schedule went into effect the first-class and newspaper mail has been brought from Livingston on Tuesdays, Thursdays and Saturdays by automobile stage.

Religious Services

Church services were held in the Canteen every Thursday evening during the month by the Rev. Geo. F. Koehler of the English Lutheran Church of Livingston, Mont.

Rev. W. Friend Day of Emigrant, Mont., of the Episcopal Church, conducted services on March 9 in the evening and on the morning of March 23.

Rev. John Chirgwin (Methodist), who is the Field Superintendent of the Montana Deaconess School at Helena, Mont., gave his illustrated free lecture on the subject "Early Montana History, Vigilante Days and Ways" in the amusement hall on the evening of March 16th.

IX. RECEIPTS AND REMITTANCES.

Certified Check #1644, drawn by H. W. Child, on the National Bank of Montana, Helena, Mont., to the Director, National Park Service,....\$303.16

Certified Check #2394, drawn by H. W. Child, on the National Bank of Montana, Helena, Mont., to The Director, National Park Service..... 45.30

Certified Check #2489 drawn by E. H. Moorman, on The Northwestern
National Bank, Livingston, Mont., to The Director, National
Park Service.....\$ 57.73

Postal Money Order #54836, dated March 10, 1924, drawn by the
Postmaster of Yellowstone Park, on the Postmaster at
Washington, D.C..... 2.90

Total \$409.09

Cordially yours,

Peter E. Bilkert

Acting Superintendent.

The Director,
National Park Service,
Dept. of the Interior,
Washington, D.C.

/AEM

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

MONTHLY METEOROLOGICAL SUMMARY.

Station, YELLOWSTONE PARK, WYO.; month, MARCH, 1924., 19

Date.	TEMPERATURE. (Degrees Fahrenheit.)			Precipitation. (In inches and hundredths.)	Character of day.	Sun-shine, per-cent-age.	ATMOSPHERIC PRESSURE. (Reduced to sea level; inches and hundredths.)	
	Max.	Min.	Mean.				Mean.	lowest
1	42	9	26	0	Clear	93	29.97	30.54
2	33	13	23	.13	PtClay	69	29.42	1
3	37	22	30	.03	Cloudy	49		28
4	28	15	22	.01	PtClay	79	TEMPERATURE.	
5	34	16	25	.04	Cloudy	61	Highest	43
6	43	27	35	.04	PtClay	38	date	6
7	28	14	21	.02	PtClay	49	lowest	-2
8	26	0	13	T	Clear	97	Greatest daily range	34
9	38	6	22	0	Clear	96	Least daily range	7
10	35	15	25	.01	PtClay	78	Mean for this month in	
11	32	11	22	0	PtClay	83	1871	80
12	27	8	18	.03	Cloudy	26	1872	81
13	31	19	25	.04	PtClay	50	1873	82
14	34	20	27	.05	Cloudy	8	1874	83
15	25	11	18	T	PtClay	71	1875	84
16	25	4	14	.01	PtClay	59	1876	85
17	25	5	15	.01	PtClay	84	1877	86
18	32	-2	15	0	PtClay	77	1878	87
19	35	18	26	.02	Cloudy	35	1879	88
20	23	16	20	.21	Cloudy	22	Normal for this month	
21	23	15	19	.09	Cloudy	4	Absolute maximum for this month for	38
22	34	12	23	.02	Cloudy	31	Absolute minimum for this month for	38
23	35	7	21	.02	PtClay	70	Average daily excess (+) or deficiency (-) of this month as compared with the normal	
24	32	14	23	.03	PtClay	59	Accumulated excess (+) or deficiency (-) since January 1	
25	34	17	26	T	PtClay	83	Average daily excess (+) or deficiency (-) since January 1	
26	34	20	27	0	PtClay	70	PRECIPITATION.	
27	39	23	31	.10	Cloudy	16	Total this month	1.21
28	32	19	26	.03	Cloudy	34	Greatest precipitation in 24 hours	0.27
29	26	14	20	.23	Cloudy	2	Snow on the ground at end of month	
30	24	2	13	.04	PtClay	77	Total precipitation this month in	
31	30	3	16	T	PtClay	98	1871	80
Mean	31.5	12.7	22.1	1.21		57	1872	81

1873 82 91 22 00 34 09 28 18 32

1874 83 92 28 01 27 10 38 19 29

1875 84 93 24 02 25 11 32 20 24

1876 85 94 27 03 29 12 18 21 30

1877 86 95 -- 04 25 13 22 22 26

1878 87 36 96 25 05 32 14 30 23 22

1879 88 23 97 20 06 20 15 30 24 22

Normal for this month 26.5

Absolute maximum for this month for 38 years 62

Absolute minimum for this month for 38 years -25

Average daily excess (+) or deficiency (-) of this month as compared with the normal -4.4

Accumulated excess (+) or deficiency (-) since January 1 #18

Average daily excess (+) or deficiency (-) since January 1 #0.2

PRECIPITATION.

Total this month 1.21; snowfall 13.9

Greatest precipitation in 24 hours 0.27, date 29-30

Snow on the ground at end of month 12.6

Total precipitation this month in

1871 80 89 0.53 98 1.40 07 4.56 16 1.46

1872 81 90 4.92 99 3.00 08 1.39 17 1.99

1873 82 91 2.41 00 3.13 09 0.77 18 1.89

1874 83 92 3.05 01 1.46 10 0.82 19 1.00

1875 84 93 0.96 02 2.46 11 0.95 20 1.95

1876 85 94 2.30 03 0.85 12 2.57 21 1.24

1877 86 95 2.79 04 2.98 13 2.00 22 0.66

1878 87 96 2.62 05 1.41 14 0.66 23 1.00

1879 88 3.12 97 1.06 06 1.35 15 1.05 24 1.21

Normal for this month 2.18

Excess (+) or deficiency (-) of this month as compared with the normal -0.97

Accumulated excess (+) or deficiency (-) since January 1 -3.55

MEAN RELATIVE HUMIDITY (Percentage).

6 a. m., 82; Noon p. m., 62; 6 p. m., 64

WIND.

Prevailing direction NW; total movement 5501 miles

average hourly velocity 1.4; maximum velocity (for 10 minutes) 29 miles per hour, from NW

on 14

WEATHER.

Number of days, clear 3; partly cloudy 17; cloudy 11; on which .01 inch, or more, of precipitation occurred 22

MISCELLANEOUS PHENOMENA (dates of).

Auroras 0; halos: solar 0, lunar 0

Hail 0; sleet 0; fog 0

Thunderstorms 0

*Frost: light ---; heavy ---; killing ---

NOTE.—“T” indicates trace of precipitation.

*In the autumn frosts are not recorded after the occurrence of “killing,” except in Florida and along the immediate coast of the Gulf of Mexico.

WEATHER BUREAU.

MONTHLY

THEORETICAL SUMMARY

STATION

Yellowstone Park, Wyo

MONTH

MAR 1924

8-1650

U. S. DEPARTMENT OF AGRICULTURE

WEATHER BUREAU.

Yellowstone Park, Wyo.

WEATHER CONDITIONS--MAMMOTH HOT SPRINGS.

M A R C H , 1924.

The month was colder than normal and characterized by generally unsettled weather with light snowfall occurring almost daily, accompanied by northerly winds. The wind movement was unusually light for March.

Temperature: Monthly mean, 22.1° , is 4.4° below normal. The first week was moderately warm for the season, but temperatures consistently below normal prevailed thereafter. No unusual extremes occurred, the highest being 43° on the 6th, and the lowest -2° on the 18th.

Precipitation: Total, 1.21 inches, is 0.97 inch below normal, all of which occurred as snowfall.

Snowfall: Total 13.9 inches; normal 17.0 inches. Snow, mostly light, occurred on 26 days of the month. The greatest fall for any one storm was 3.8 inches on the 29-30th. The depth on the ground increased from 6.7 inches on the 1st to 12.6 inches on the 31st. The ^{20-year} average depth of snow on the ground at the end of March is 5.8 inches.

Wind: Average hourly velocity 7.4 miles; normal 8.8. The maximum velocity, 29 miles from the northwest on the 14th, is with one exception, the lowest of record for March. The prevailing direction was from the northwest, which is unusual, and caused the month to be somewhat disagreeable, despite the fact that the velocity was generally light.

Sunshine: Percentage of possible 57; normal 57.

E. H. Fletcher,
Observer.